

REMARKS

Claims 26, 27, 32, 33, 41, 44 and 46 have been amended. Claims 26, 27 and 32-47 are pending. Applicant reserves the right to pursue the original and other claims in this and in other applications.

Claims 27, 32, and 44 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,130,448 ("Bauer"). Applicant respectfully traverses the rejection.

Claim 27 recites an active pixel sensor system comprising, "a lensing element configured to receive optical data and change an imaging characteristic, said lensing element providing cover for the active pixel array; and a mounting structure extending from a plate surface, said mounting structure being adapted to removably connect a prefabricated lens system to said plate above said lensing element."

Bauer is directed to a packaging for integrated circuit optical sensors. Bauer discloses an optical sensor 22 attached to a top side of a base substrate 28, conductive strips 30 to conduct signals and supply voltages between the optical sensor 22 and the base substrate 28, and a window 48 bonded to the base substrate 28 in a spaced-apart relationship. (Bauer, col. 4, line 52 – col. 5, line 40; FIGS. 1-2) The window 48 allows light rays 50 to strike imaging electronics on the optical sensor 22 and the window 48 may be constructed to incorporate one or more lenses as shown by window 54. (Bauer, col. 5, ll. 40-42; col. 6, ll. 45-46; FIG. 3) The window 48, however, is not a mounting structure extending from a plate surface. Particularly, Bauer fails to disclose or suggest "a mounting structure extending from a plate surface, said mounting structure being adapted to removably connect a prefabricated lens system to said plate above said lensing element."

For at least these reasons, Applicant respectfully submits that the rejection of claim 27 be withdrawn and the claim allowed.

Claim 32 recites an assembly for an image sensor device comprising, in part, "a cover plate operatively disposed over said image sensor array, said cover plate including an integrated lensing structure which is developed to change imaging characteristics of incoming radiation which impinge towards said image sensor array; and a mounting structure formed as a mesa-like protrusion on a surface of said cover plate."

As mentioned earlier, the window 48 in the Bauer device is not a mounting structure extending from a surface of a cover plate, much less a mesa-like protrusion. Particularly, Bauer fails to disclose or suggest "a cover plate operatively disposed over said image sensor array, said cover plate including an integrated lensing structure which is developed to change imaging characteristics of incoming radiation which impinge towards said image sensor array; and a mounting structure formed as a mesa-like protrusion on a surface of said cover plate." Therefore, Applicant respectfully submits that the rejection of claim 32 be withdrawn and the claim allowed.

Claim 44 recites a method for controlling Petzval field curvature in a camera system comprising, in part, "contouring a cover plate to form a lensing structure; securing a mounting structure to an upper surface of said cover plate, said mounting structure being adapted to connect a lens system to said cover plate above said lensing structure; and covering an imaging array with said cover plate."

As mentioned earlier, the window 48 in the Bauer device is not a mounting structure extending from an upper surface of a cover plate. Particularly, Bauer fails to

disclose or suggest "securing a mounting structure to an upper surface of said cover plate, said mounting structure being adapted to connect a lens system to said cover plate above said lensing structure." Therefore, Applicant respectfully submits that the rejection of claim 44 be withdrawn and the claim allowed.

Claims 26, 41, 43, and 46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bauer in view of U.S. Patent No. 5,847,756 ("Iura"). Applicant respectfully traverses the rejection.

Claim 26 recites an image sensor camera system comprising, in part, "a lens system operatively coupled to the image sensor array and configured to carry and focus the optical data onto the image sensor array, said lens system including a plurality of lenses and a cover plate, said cover plate contoured into a lensing structure that changes an imaging characteristic; a mounting structure extending from an upper surface of said cover plate and adapted to secure said lens system to said cover plate above said lensing structure; and sensor electronics coupled to the image sensor array."

As mentioned earlier, Bauer fails to disclose or suggest "a mounting structure extending from an upper surface of said cover plate and adapted to secure said lens system to said cover plate above said lensing structure." Iura does not cure the deficiencies of Bauer. Iura is directed to an image pickup apparatus having a lens system 101, a shutter 102, an image sensor device 103, an amplifier 104, an analog-to-digital converter 105, a signal processing circuit 106, a camera system control circuit 107, an image sensor driving circuit 109 and a shutter button 110. (Iura, col. 7, lines 38-43) The Office Action relies on Iura as only disclosing an image sensor camera system with an imager and sensor electronics including an amplifier. (Office Action, p.4) Because Bauer and Iura,

individually or in combination, fail to disclose or suggest all of the limitations of claim 26, Applicant respectfully submits that the rejection of claim 26 should be withdrawn and the claim allowed.

Claim 41 recites an image sensor device comprising, in part, "image sensor electronics connected to [an] image sensor; a cover part which covers the integrated circuit image sensor, wherein said cover part includes a plate having a plurality of surfaces, at least one of the plurality of surfaces being contoured into a lensing element; and a mounting structure formed as a well-like depression in said plate and adapted to secure a prefabricated lens system to said cover part above said lensing element."

The Bauer window 48 is not a mounting structure formed with a well-like depression in a plate. Iura fails to cure the deficiencies of Bauer. The Office Action relies on Iura as only disclosing an image sensor electronics connected to the image sensor. (Office Action, p.5) Because the Bauer and Iura combination fails to disclose or suggest "a mounting structure formed as a well-like depression in said plate and adapted to secure a [] lens system to said cover part above said lensing element." For at least these reasons, Applicant respectfully submits that the rejection of independent claim 41 and its dependent claim 43 be withdrawn and the claims allowed.

Claim 46 recites a method of forming a digital image comprising, in part, "focusing incident light on an imaging array by passing the light through a lensing element formed in a cover plate, said cover plate being secured to a prefabricated lens system by a mounting structure formed as a mesa-like protrusion on a surface of said cover plate."

As mentioned earlier, the Bauer and Iura combination fails to disclose or suggest a mounting structure formed as a mesa-like protrusion on a surface of a cover part. Particularly, the Bauer and Iura combination fails to disclose or suggest “[a] cover plate being secured to a prefabricated lens system by a mounting structure formed as a mesa-like protrusion on a surface of said cover plate.” For at least these reasons, Applicant respectfully submits that the rejection of claim 46 be withdrawn and the claim allowed.

Claims 33-40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bauer in view of U.S. Published Application No. 2003/0137595 (“Takachi”). Applicant respectfully traverses the rejection.

Claims 33-40 depend from claim 32 and as such recite an assembly for an image sensor device comprising, in part, “a cover plate operatively disposed over [an] image sensor array, said cover plate including an integrated lensing structure which is developed to change imaging characteristics of incoming radiation which impinge towards said image sensor array; and a mounting structure formed as a mesa-like protrusion on a surface of said cover plate.”

As mentioned earlier, Bauer fails to disclose or suggest a mounting structure formed as a mesa-like protrusion on a surface of a cover plate. The Office Action concedes that Bauer does not disclose a cover plate including a mounting structure but contends that Takachi discloses a cover plate including a mounting structure developed to hold an assembly. (Office Action, p.6) Applicant respectfully disagrees. Takachi is directed to an image pickup device 2b having an image sensing device accommodating package 3, a solid state image sensing device 4, a seal glass 5 for sealing the solid state image sensing device 4, optical component holding members 8a, 8b, lenses 10, 13, a diaphragm 12 and an O-ring

17. (Takachi, ¶¶ [0028]-[0029]) Takachi's optical component holding members 8a, 8b are not mounting structures formed as mesa-like protrusions on a surface of a cover plate. Particularly, the Bauer and Takachi combination fails to disclose or suggest "[a] cover plate including an integrated lensing structure which is developed to change imaging characteristics of incoming radiation which impinge towards said image sensor array; and a mounting structure formed as a mesa-like protrusion on a surface of said cover plate." Therefore, Applicant respectfully submits that the rejection of claims 33-40 be withdrawn and the claims allowed.

Claim 36 depends from claim 32 and further recites "wherein said multiple lens system includes a convex lens, a first plano-convex lens, and a second plano-convex lens."

The Office Action contends that Bauer and Takachi disclose the limitations. (Office Action, p.7) Applicant respectfully disagrees. The cited reference character 54 in Bauer is not a convex lens, and the cited characters 10 , 13 in Takachi are not plano-convex lenses. For this additional reason, Applicant respectfully submits that the rejection of claim 36 be withdrawn and the claim allowed.

Claim 39 depends from claim 32 and further recites "wherein said integrated lensing structure forms a concave lens part."

The Office Action contends that Bauer discloses this limitation. (Office Action, p.8) Applicant respectfully disagrees. The cited character 54 in Bauer is a convex lens part and not a concave lens part. For this additional reason, Applicant respectfully submits that the rejection of claim 39 be withdrawn and the claim allowed.

Claim 42 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bauer in view of Iura and further in view of U.S. Patent No. 6,597,401 ("Maruyama"). Applicant respectfully traverses the rejection.

Claim 42 depends from claim 41 and as such recites an image sensor device comprising, in part, "image sensor electronics connected to [an] image sensor; a cover part which covers the integrated circuit image sensor, wherein said cover part includes a plate having a plurality of surfaces, at least one of the plurality of surfaces being contoured into a lensing element; and a mounting structure formed as a well-like depression in said plate and adapted to secure a prefabricated lens system to said cover part above said lensing element." It further recites "wherein said lensing element includes at least one of a refractive lensing element and a diffractive lensing element."

As mentioned earlier, Bauer and Iura fail to disclose or suggest all of the limitations of claim 41. Maruyama fails to cure the deficiencies of the Bauer and Iura combination. The Office Action relies on Maruyama as only disclosing a lensing element including refractive and diffractive lensing elements. Because Bauer, Iura, and Maruyama, individually or in combination, fail to disclose or suggest all of the limitations of claim 42, Applicant respectfully submits that the rejection of claim 42 be withdrawn and the claim allowed.

Claim 45 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bauer in view of U.S. Patent No. 5,977,535 ("Rostoker"). Applicant respectfully traverses the rejection.

Claim 45 depends from claim 44 and as such recites a method for controlling Petzval field curvature in a camera system comprising, in part, "contouring a cover plate to form a lensing structure; securing a mounting structure to an upper surface of said cover plate, said mounting structure being adapted to connect a lens system to said cover plate above said lensing structure; and covering an imaging array with said cover plate." It further recites that "contouring the cover plate to form the lensing structure includes forming at least one of a refractive lens and a diffractive lens."

As mentioned earlier, Bauer fails to disclose or teach all of the limitations of claim 44. Rostoker fails to cure the deficiencies of Bauer with respect to claim 44. The Office Action relies on Rostoker as only teaching using both refractive and diffractive lenses in an imaging optical system. (Office Action, p.9) Because the Bauer and Rostoker combination fails to disclose or suggest all of the limitations of claim 45, Applicant respectfully submits that the rejection of claim 45 be withdrawn and the claim allowed.

Claim 47 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bauer in view of Iura and further in view of Rostoker. Applicant respectfully traverses the rejection.

Claim 47 depends from claim 46 and as such recites a method of forming a digital image comprising, in part, "focusing incident light on an imaging array by passing the light through a lensing element formed in a cover plate, said cover plate being secured to a prefabricated lens system by a mounting structure formed as a mesa-like protrusion on a surface of said cover plate." It further recites that "said lensing element is formed to include at least one of a refractive lens and a diffractive lens."

As mentioned earlier, the Bauer and Iura combination fails to disclose or teach all of the limitations of claim 46. Rostoker fails to cure the deficiencies of the Bauer and Iura combination. The Office Action relies on Rostoker as only teaching using both refractive and diffractive lenses in an imaging optical system. (Office Action, p.9) Because the Bauer, Iura, and Rostoker combination fails to disclose or suggest all of the limitations of claim 46, Applicant respectfully submits that the rejection of claim 47 be withdrawn and the claim allowed.

In view of the above, Applicant believes the pending application is in condition for allowance.

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